

5.4600

S/204/62/002/001/005/007

1032/1232

AUTHORS: Brodskiy, A. M., Kolbanovskiy, Yu. A., Polak, L. S.

TITLE: On energy transfer during radiolysis of hydrocarbons

PERIODICAL: Neftekhimiya, v. 2, no. 1, 1962, 54-67

TEXT: This is a theoretical treatment of previous experimental work on inhibition of radiolysis of non-polar, non-associated organic compounds in the liquid phase by the admixture of small amounts (10^{-2} to 10^{-5} mole/l) of inhibitors, usually aromatic compounds or iodine. A model for the inhibition mechanism is proposed, based on electromagnetic interaction between the excited molecules of the substance subjected to radiolysis (energy donor) and the molecules of the inhibitor (energy acceptor). A relationship between the inhibition probability and the concentration of the inhibitor is derived, according to which the former is proportional to the $2/3$ -th power of the latter. This relationship is valid for inhibitor concentrations lower than 10^{-2} mole/l. The relationship between the inhibition effect and the character of the excitation spectra of the molecules involved is considered. There are 9 figures.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR (Institute of Petrochemical Synthesis, AS USSR)

SUBMITTED: November 20, 1961

Card 1/1

40913

S/204/62/002/001/006/007

I032/I232

11.1510
AUTHORS: Lependina, O. L., Polak, L. S.

TITLE: The effect of the structure of hydrocarbons on radical formation during low temperature γ -radiolysis in the solid phase

PERIODICAL: Neftekhimiya, v. 2, no. 1, 1962, 68-70

TEXT: This is an experimental study of the relative probabilities of the rupture of different C-H bonds during radiolysis of hydrocarbons at low temperature. Different isomers of dodecane were irradiated with γ -rays from a Co^{60} source at -196°C and the EPR spectra of the products of radiolysis were taken at the same temperature. It is inferred from comparison of the EPR spectra that if a ternary carbon atom is present in the molecule the radical formation takes place preferentially through rupture of the C-H bond at the ternary C-atom, while the position of this C-atom in the molecule and the character of branching are of no significance. There is one figure. ✓

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR (Institute of Petrochemical Synthesis, AS USSR)

SUBMITTED: January 9, 1962

Card 1/1

S/204/62/002/002/005/007
I060/I242

AUTHORS: Topchiyev, A.V., Polak, L.S., Glushnev, V.Ye.,
Popov, V.T., Timofeyev, V.D., Glazunov, P.Ya.,
and Ryabchikova, G.G.

TITLE: Radiation-thermal cracking of petroleum hydrocarbons

PERIODICAL: Neftekhimiya, v.2, no.2, 1962, 196-210

TEXT: This is the first in a series of papers reporting on the basic problems of the radiation-thermal cracking (RTC) process. Investigation deals with the following subjects: 1. RTC of heptane under static conditions; 2. RTC in continuous process in a decreasing field; 3. RTC in a continuous process in a uniform field; 4. Influence of pressure on RTC; 5. RTC in a mixed field of α and γ radiations; 6. Calculation of kinetics, mechanism, and thermodynamic parameters of RTC, and its comparison with other types of cracking and pyrolysis.

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S/204/62/002/002/005/007
I060/I242

Radiation-thermal cracking...

This paper compares the first two methods with thermal cracking under the same conditions. The activation energy of the RTC process is very close to the activation energy of thermal cracking. With the rise in the temperature of the RTC process the yield of liquid and gaseous products increases sharply. The output of unsaturated compounds, both gaseous and liquid per unit of crude is considerably higher with the RTC method than with thermal cracking under the same conditions. The rate of the RTC process increases sharply through the action of ionizing radiation. There are 15 figures and 11 tables.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR (Institute of Petrochemical Synthesis, AS USSR) and Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry, AS USSR)

SUBMITTED: March 1, 1962

Card 2/2

GLAVATI, O.L.; POLAK, L.S.

Production of stereospecific polymers by γ -irradiation of
clathrate inclusion compounds. Neftekhimiia 2 no.3:318-323
My-Je '62. (MIRA 15:8)

1. Institut neftekhimicheskogo sintesa AN SSSR.
(Polymerization) (Gamma rays)

POLAK, L.S.; SHCHERBAKOVA, A.S.

Effect of small additions of excitation acceptor on radical formation in the γ -radiolysis of n.hexane. Neftekhimiia 2 no.3:339-341 My-Je '62. (MIRA 15:8)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Radicals (Chemistry)) (Hexane) (Gamma rays)

43533

5/204/62/002/005/007/007
E202/E192

11/34-0

AUTHORS: Gulyayev, G.V., Kozlov, G.I., Polak, L.S.,
Khitrin, L.N., and Khudyakov, G.N.

TITLE: Conversion of methane into acetylene in a plasma jet
PERIODICAL: Neftekhimiya, v.2, no.5, 1962, 793-794

TEXT: Acetylene synthesis was studied quantitatively in a constricted arc plasma torch. The working parameters of the latter were as follows: W-cathode, Cu - water cooled nozzle-anode, input 15 kW, power to plasma 9.5-10.0 kW, current 280 A, working gas - argon, at 60.3-58.0 litre/min. Methane was introduced above the W-electrode at rates 6.7-49.7 litre/min. The temperature of pure Ar plasma was calculated approximately at 10 000 °K, and the time of residence of methane in plasma approximately 10⁻⁵ sec. The product gases were sampled along the plasma jet axis at various distances and analysed chromatographically. In contrast to the results of H.W. Leutner and C.S. Stokes (Ind. Engng Chem., v.53, 1961, 341) the authors found that almost 100% of methane had reacted and the conversion into acetylene was approximately 80%.

Card 1/2

3/056/62/043/004/018/061
B102/B180

AUTHORS: Aleksoandrov, A. Yu., Delyagin, N. N., Mitrofanov, K. P.,
Polak, L. S., Shpinel', V. S.

TITLE: Quadrupole interaction and isomeric shifts of 23.8-keV gamma
transition of Sn^{119} nucleus in organo-tin compounds

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
no. 4(10), 1962, 1242 - 1247

TEXT: In continuation of earlier studies (ZhETF, 42, 637, 1962; 43, 448, 1962) on the Mössbauer resonance absorption spectra of 23.8-keV γ -quanta by Sn^{119} , this work deals with the effect of substituting certain atomic groups in organic compounds of the $(\text{C}_4\text{H}_9)_2\text{SnX}_n$ type, and SnX_4 by others on the isomeric shift δ , and the quadrupole interaction; X is an element or a group of atoms, $n = 1, 2$. The resonance absorption spectra were recorded with a) an absorber whose velocity was varied linearly with time and b) one of constant velocity, the thicknesses varying from 30 - 100 mg/cm². The latter method yielded more accurate spectra since the device used had Card 1/42.

Quadrupole interaction ...

S/056/62/043/004/018/061
B102/B180

selective sensitivity to 23.8-keV γ -quanta. 5 mg/cm² SnO₂ containing Sn^{119m} was used as a γ -quantum source. The organo-tin compounds investigated had no impurities which affected the shape of the spectrum. In all measurements the source was kept at room temperature and the absorber at liquid-nitrogen temperature. The values obtained for δ and for the quadrupole splitting constant Δ vary regularly for the compounds for which the electronegativity of the X atoms varies. Double bonds, and also atoms with high electronegativity not directly bonded with the tin atoms, were found to exert a strong effect on the electric field strength acting on the tin nucleus. This can be qualitatively explained by the molecular structure. There are 3 figures and 1 table. ✓

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University). Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR)

SUBMITTED: May 18, 1962
Card 2/12

S/056/62/043/006/018/067
B102/B104

AUTHORS: Aleksandrov, A. Yu., Delyagin, N. N., Mitrofanov, K. P.,
Polak, L. S., Shpinel', V. S.

TITLE: Influence of gamma irradiation on the shape of Mössbauer
resonance absorption spectra of organo-tin compounds

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
no. 6(12), 1962, 2074 - 2076

TEXT: The spectra of Mössbauer resonance absorption of 23.8-kev gamma
quanta by Sn^{119} in organo-tin compounds depends on the valency of the ab-
sorbing atom, on the molecular structure and on peculiarities of the bonds
of the tin atom (ZhETF, 43, 448, 1962; 43, 1242, 1962). This dependence
could be used to draw conclusions on irradiation-induced changes of a
material from changes in the Mössbauer resonance absorption characteristics.
In order to study these possibilities, the Mössbauer resonance absorption
spectra of $(\text{C}_4\text{H}_9)_2\text{SnSO}_4$ (I) and $[(\text{C}_4\text{H}_9)_2\text{Sn}(\text{OCOCCH}_2\text{CH}_3)_2]_n$, irradiated at
25-35°C by Co^{60} γ -rays with doses between $4 \cdot 10^{20}$ and $3 \cdot 10^{22}$ ev/cm^3 were
Card 1/3

Influence of gamma ...

S/056/62/043/006/018/067
B102/B104

investigated. The spectrum of non-irradiated I shows a symmetric doublet, the peaks corresponding to the velocities -0.6 and +4.2 mm/sec. Irradiation with maximum dose led to a distinct change in the spectrum: two lines with an intensity ratio 1:3 arose, corresponding to the velocities -0.3 mm/sec and 4 mm/sec. indicating a disintegration of I into C_4H_9 and $SnSO_4$. In a few cases only one oxygen atom was split off from I. On irradiating I in the presence of oxygen only one line appeared, its peak corresponding to zero velocity. This spectrum is interpreted as due to the presence of SnO_2 or a similar oxide formed in oxidation by O_3 produced on irradiation. The spectrum of the polymer irradiated with a dose of 11.2 Mr shows two lines of almost equal width and intensity at -0.15 and 2.85 mm/sec. When the dose is increased to 160 Mr both lines broaden, the latter doing so more rapidly but reducing its height at the same time. When the dose has reached 250 Mr, the line at -0.15 mm/sec has remained almost unchanged (width 1.5 mm/sec) but the 2.85 mm/sec line shows a splitting into several flat poorly resolved components. This asymmetry can be explained by assuming an intramolecular magnetic field whose energy of

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Influence of gamma ...

S/056/62/043/006/018/067
B102/B104

interaction with the Sn^{119} nucleus is weaker than that of quadrupole interaction. It cannot be attributed to any certain chemical structure. There is 1 figure.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University); Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR) ✓

SUBMITTED: July 20, 1962

Card 3/3

2

POLAK, L.S., LAVROVSKIY, K.P., GLAZUNOV, P.YA.

Radiation thermal cracking of petroleum hydrocarbons and its commercial application.

Report to be submitted for the Sixth World Petroleum Congress, Frankfurt, 16-26 June 63

3
PAUSHKIN, YA.M., POLAK, L.S., VISHNYAKOVA, T.P., PATALAKH, I.I.,
MACHUS, F.F., SOKOLINSKAYA, T.A.

New ferrus-containing polymers on the basis of ferrocene and their electrophysical properties.

Report submitted for the International Symposium of Macromolecular chemistry
Paris, 1-6 July 63

BEREZKIN, V.G.; POLAK, L.S.

Methods of chromatographic analysis of C_7-C_{12} hydrocarbons. Trudy
Kom.anal.khim. 13:205-209 '63. (MIRA 16:5)
(Hydrocarbons) (Chromatographic analysis)

TOPCHIYEV, A.V. [deceased]; POLAK, L.S.; TIMOFEYEV, V.D.

Radiation-induced thermal cracking of petroleum hydrocarbons.
Part 2: Radiation-induced thermal cracking in a uniform temperature
and dose field of γ radiation under pressures from 1 to 30 atm.
Neftekhimiia 3 no.1:114-123 Ja-F '63. (MIRA 16:2)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Hydrocarbons) (Cracking process)
(Gamma rays)

S/204/63/003/001/010/013
E075/E436

AUTHORS: Kolbanovskiy, Yu.A., Pepelyayev, Yu.V., Polak, L.S.
TITLE: The influence of temperature on the radiolysis of
n-heptane adsorbed on Al_2O_3

PERIODICAL: Neftekhimiya, v.3, no.1, 1963, 124-127

TEXT: The aim of the work was to investigate the effect of temperature on γ -radiolysis of n-heptane adsorbed on $\gamma-Al_2O_3$. The catalyst was activated at $500^\circ C$ and pressure of 10^{-4} mm Hg for 10 hours. A monolayer of n-heptane adsorbed on Al_2O_3 was irradiated (doses of 2.4×10^{16} eV/cm² sec in the temperature range 20 to $350^\circ C$. Compared with the results of the irradiation in a homogeneous system, the heterogeneous process is characterized by the absence of unsaturated hydrocarbons in the products. This may be due to irreversible adsorption of such hydrocarbons on Al_2O_3 surface. The decomposition of n-heptane at temperatures above $150^\circ C$ is a chain process. At $350^\circ C$ the decomposition yield is about 300 molecules/100 eV and the total activation energy is 14.5 ± 1.5 kcal/mol. As the activation energy for the homogeneous decomposition is about 20 kcal/mol, the difference is probably caused by the heat of adsorption of the

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The influence of temperature ... radicals. The life of radicals on the irradiated Al_2O_3 surface at $150^\circ C$ is about 10^{-6} sec. There are 1 figure and 1 table.
S/204/63/003/001/010/013
E075/E436
ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR
(Institute of Petrochemical Synthesis AS USSR)
SUBMITTED: July 9, 1962

Card 2/2

D'YAKOVA, T.V.; PETROV, A.I.A.; POLAK, L.S.; CHERNYAK, N.Ya.

Mass spectra of isomeric tetradecanes. Neftekhimiia 3 no.2:
169-172 Mr-Ap '63. (MIRA 16:5)

1. Institut neftekhimicheskogo sinteza AN SSSR imeni A.V.Topchiyeva.
(Tetradecane--Spectra)

KOLBANOVSKIY, Yu.A.; POLAK, L.S.; SHLIKHTER, E.B.

Radiation polymerization of n.heptane in the presence of $TiCl_4$.
Neftekhimiia 3 no.2:222-226 Mr-Apr '63. (MIRA 16:5)

1. Institut néftekhimicheskogo sinteza AN SSSR imeni A.V.Topchiyeva.
(Heptene) (Radiation) (Polymerization)

L-15478-63 EPF(c)/EWT(m)/BDS AFPTC/ASD/APGC Pr-4 RM/BW/WW/MN
 s/0204/63/003/004/0615/0619 69
 ACCESSION NR: AP3005459 67
 AUTHORS: Spitsy*n, Vikt. I.; Ryabchikova, G. G.; Polak, L. S.;
 Glazunov, P. Ya.; Yakubovich, A. A.
 TITLE: Thermo-radiation cracking¹⁹ of propane
 SOURCE: Neftekhimiya, v. 3, no. 4, 1963, 615-619
 TOPIC TAGS: propane cracking, thermo-radiation cracking, propane,
 thermal cracking, ionized irradiation
 ABSTRACT: Authors studied thermo-radiation cracking¹⁹ of propane, which
 is a much lighter hydrocarbon and which is used as an industrial raw
 material. The experiments were conducted at temperatures between 500
 and 700C. Propane gives a fairly good conversion and a comparatively
 simple composition of gaseous products when an intensive radiation
 dose is applied during the thermal-radiation process, as well as dur-
 ing thermal cracking. The results of thermo-radiation cracking of
 propane and their comparison to thermal cracking under the same con-
 ditions are presented. The yields of H₂, CH₄, C₂H₄ and C₂H₆ as a

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L 15478-63

ACCESSION NR: AP3005459

2

function of temperature are also given. The activation energy of the propane thermo-radiation cracking process is close to the activation energy of the chain propagation during thermal cracking. The application of ionized irradiation for the initiation of chain reaction permits the carrying-out of the propane cracking process at temperatures which are 100C below ordinary thermal cracking and with good conversion. The experimental and chemical yields under the conducted experimental conditions were approximately 10^8 molecules per 100 ev. Orig. art. has: 5 figures and 3 tables.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of physical chemistry, AN SSSR), Institut neftekhimicheskogo sinteza AN SSSR im. A. V. Topchiyeva (Institute of petrochemical synthesis, AN SSSR)

SUBMITTED: 19Dec62

DATE ACQ: 06Sep63

ENCL: 00

SUB CODE: CH

NO REF SOV: 004

OTHER: 002

Card 2/2

GLAVATI, O.L.; POLAK, L.S.; SHCHEKIN, V.V.

Radiation-induced and stereospecific polymerization of acrylonitrile and acrylic acid in montmorillonite inclusion compounds.
Neftekhimiia 3 no.6:905-910 N-D '63. (MIRA 17:3)

1. Institut neftekhimicheskogo sinteza AN SSSR Im. A.V.Topchiyeva.

KUSTANOVICH, I.M.; PATALAKH, I.I.; POLAK, L.S.

Effect of adsorbed gases on the electrophysical properties of
pyrolyzed polyacrylonitrile fibers. *Kin.i kat.* 4 no.1:167 Ja-F '63.
(MIRA 16:3)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Acrylonitrile polymers—Electric properties) (Adsorption).

POLAK, L.S.

AID Nr. 963-11 10 May

**ELECTROMAGNETIC EJECTION OF A SPHERICAL BODY FROM A
CONDUCTING LIQUID (USSR)**

Andres, U. Ts., L. S. Polak, and S. I. Syrovatskiy. Zhurnal tekhnicheskoy fiziki, v. 33, no. 3, Mar 1963, 263-267. S/057/63/033/003/002/021

A theoretical and experimental study has been carried out to determine the electromagnetic force exerted on a spherical body immersed in a conducting liquid in a magnetic field. In the theoretical part MHD relationships are used to derive a general formula for this force and a dimensionless parameter R , which equals Reynolds number Re when Re is small and Re^2 when it is large. The formula can be solved precisely for $R \ll 1$, while experimental determination of the function $\Phi(R)$ which appears in the formula is necessary for $R \gg 1$. In the experimental part direct measurements were made of the force exerted on a nonconducting ball with a diameter of 1.2 cm immersed in a rectilinear container of organic glass filled

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AID No. 963-11 10 May

S/057/63/033/003/002/021

ELECTROMAGNETIC EJECTION [Cont'd]

with a current-conducting water solution of NaOH and glycerin placed between the poles of a magnet with a field strength of 2000 to 5000 gauss. The conductivity and viscosity of the solution were varied by changing the NaOH and glycerin concentrations, respectively. The buoyant force exerted on the ball was measured by deformation of a quartz spiral from which the ball was suspended. Results obtained for $R > 10^2$ show that at low R values the flow of liquid around the ball leads to a decrease of buoyant force with respect to the force in an unperturbed liquid. With increased R the magnitude of the buoyant force increases. Attempts to measure the force on a conducting (steel) ball failed, owing to the formation of gas bubbles on its surface, which varied its conductivity irregularly.

[BB]

Card 2/2

S/020/63/148/001/027/032
B101/B186

AUTHORS: Aleksandrov, A. Yu., Delyagin, N.N., Mitrofanov, K.P.,
Polak, L.S., Shpinel', V.S.

TITLE: Investigation of organo-tin compounds by Mössbauer resonance
absorption of gamma quanta

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 1, 1963, 126-128

TEXT: The 23.8 kev gamma absorption spectra by Sn^{119} nuclei were investigated for 22 organo-tin compounds. $\text{Sn}^{119}\text{mO}_2$ was used as gamma source, and the absorbers were cooled to nitrogen temperature. The isomeric shift δ and the amount Δ of the quadrupole splitting were measured. Results: (1) In the compounds SnR_4 , where $\text{R} = \text{C}_2\text{H}_5$, C_6H_5 , C_3H_7 , C_4H_9 , or $\text{CH}_2\text{CH}_2\text{CN}$, δ was ~ 1.3 mm/sec, corresponding to the electron density caused by 4 Sn-C bonds on the Sn nucleus. The atoms not bound to Sn had no effect on δ . (2) In the compounds $(\text{C}_4\text{H}_9)_2(\text{C}_n\text{H}_{2n+1}\text{COO})_2$, $n = 1, 7$, or 17 , δ was 1.45 ± 0.10 mm/sec, and Δ was 3.45 ± 0.20 mm/sec. n

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Investigation of organo-tin compounds ...

S/020/63/148/001/027/032
B101/B186

had no effect on the electron distribution in the Sn-O bond. (3) The highly electronegative chlorine affected δ , even if it was not bound to Sn. Data found for $(C_4H_9)_2Sn(CH_2ClCOO)_2$: $\delta = 1.60 \pm 0.10$, $\Delta = 3.65 \pm 0.10$, and for $(C_4H_9)_2Sn(CCl_3COOH)_2$: $\delta = 1.65 \pm 0.10$, $\Delta = 3.80 \pm 0.10$. (4) For $FSn(CH_2CH_2CN)_3$ and $(C_2H_5)_3SnOH$, the doublet formed by quadrupole interaction was found to be asymmetric. It is assumed that the quadrupole interaction is accompanied by a magnetic interaction affected by m . If an internal magnetic field exists in the molecule perpendicularly to the electric field the component of the quadrupole splitting is affected by whether the transition occurs from the $m = \pm 3/2$ or from the $m = \pm 1/2$ sublevel. There are 1 figure and 1 table. ✓

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR); Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova (Institute of Nuclear Physics of the Moscow State University imeni M.V. Lomonosov)

Card 2/3

Investigation of organo-tin compounds ...

S/020/63/148/001/027/032
B101/B186

PRESENTED: July 21, 1962 by A.P. Vinogradov, Academician

SUBMITTED: July 21, 1962

Card 3/3

45177

S/020/63/148/003/035/037
B117/B186

51600
AUTHORS:

Gulyayev, G. V., Kozlov, G. I., Polak, L. S. Khitrin,
L. N., Corresponding Member AS USSR, Khudyakov, G. N.

TITLE:

Transformation of methane into acetylene in the argon
plasma beam

PERIODICAL:

Akademiya nauk SSSR. Doklady, v. 148, no. 3, 1963, 641-643

TEXT: In order to reduce the specific energy consumption during production of acetylene and to achieve a high degree of transformation of methane into acetylene, experiments were made with argon plasma beam. The latter was produced in a 15 kw plasmotron by a stabilized argon discharge ignited between a tungsten cathode and a water-cooled copper anode. Plasma was discharged through a 3 mm jet into the anode. Methane was introduced into the plasma beam through special openings in the jet wall at an angle of 90° to the direction of plasma discharge. Reaction products were tested chromatographically for content of H_2 , CH_4 , C_2H_6 , C_2H_4 and C_2H_2 . The dependence of the degree of cracking of methane on its consumption was investigated at 280 a, a power of 9.5 kw and an argon consumption of Card 1/3.

S/020/63/148/003/035/037
B177/B186

Transformation of methane into ...

60 l/min. The analysis of gas specimens showed that the specific energy consumption is lower in the center (along the axis) of the plasma beam than in the cross section of the total beam. A sufficiently high degree of cracking could be obtained at the equivalent of 5000°C along the beam axis and a methane consumption of 30 l/min. In this case the specific energy consumption was 15 kwh/m³ C₂H₂ per 1 Nm³ of the acetylene produced. 80% cracking in the complete plasma beam could be achieved only at a high specific consumption (~40 kwh/m³ C₂H₂). This may be traced back to relatively high energy losses in the jet walls. Though the specific energy consumption could not be reduced by increasing the amperage (up to 435 a) a certain reduction of the same (down to 24 kwh/m³ C₂H₂) could be achieved by using jets of larger diameters (4.5, 7 mm) and simultaneously increasing the plasmotron power (to ~12.5 kw), as well as by shortening the electrode distance. Experiments with 4.5 and 7 mm jets showed that the specific energy consumption would be about 13 kwh/m³ C₂H₂ in a standard plasmotron of ~70% efficiency and an argon plasma beam. Further possibilities of using plasma beams for endothermal chemical reactions are

Card 2/3

ALEKSANDROV, A.Yu.; MITROFANOV, K.P.; OKHLOBYSTIN, O.Yu.; POLAK, L.S.;
SHPINEL', V.S.

Some features of the Mössbauer effect on Sn^{119} nuclei in organotin
oxides. Dokl. AN SSSR 153 no.2:370-373 N '63. (MIRA 16:12)

1. Institut neftekhimicheskogo sinteza AN SSSR i Institut yadernoy
fiziki Moskovskogo gosudarstvennogo universiteta im. M.V.Lomohosova.
Predstavleno akademikom A.P.Vinogradovym.

POLAK, L. S.

"Radiation thermal cracking (RTC) of oil, oil products and gaseous hydrocarbons."

report submitted for 3rd Intl Conf, Peaceful Uses of Atomic Energy, Geneva,
31 Aug-9 Sep 64.

POLAK, L.S. (Moscow)

"On certain group properties of classical mechanics"

Report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow 29 Jan - 5 Feb 64.

ACCESSION NR: AP4010061

S/0021/64/000/001/0082/0024

AUTHOR: Gut'yrya, V. S. (Academician); Kachan, O. O.; Kolbanovs'ky'y, Yu. A.;
Polak, L. S.; Nizel's'ky'y, Yu. M.; Frolova, V. S.

TITLE: Radiolysis of cyclohexane adsorbed by synthetic zeolites

SOURCE: AN UkrRSR. Dopovid, no. 1, 1964, 82-84

TOPIC TAGS: radiation chemistry, radiolysis cation-exchanger, molecular sieve,
zeolite, synthetic zeolite, type X molecular sieve

ABSTRACT: The present work was done to determine the influence of the chemical composition of the adsorbents on the composition of the radiolytic products of cyclohexane. Synthetic zeolites (commercial CoX, NaX, NaCaX and NaNiX) were used to adsorb cyclohexane, which was irradiated with Co⁶⁰ gamma-radiation. The radiolytic products were analyzed by gas chromatography. The results indicate that the presence of two cations in the zeolite, one of them of variable valence, is important for the formation of an adsorbent actively affecting radiolysis. Orig. art. has 2 figures and 1 table.

Card 1/2

ACCESSION NR: AP4010061

ASSOCIATION: Insty*tut khimiiv polimeriv i monomeriv AN UkrRSR (Institute of the Chemistry of Polymers and Monomers, AN UkrRSR); Insty*tut naftokhimichnogo sy*ntezu AN SRSR (Institute of Petrochemical Synthesis, AN SRSR /Ukrainian equivalent of SSSR/)

SUBMITTED: 20Jun63

DATE ACQ: 10Feb64

ENCL: 00

SUB CODE: CH, NS

NO REF SOV: 001

OTHER: 003

Card 2/2

L 51467-65 EFF(c)/EPF(n)-2/EPR/EPA(w)-2/EWP(j)/EWA(c)/EWT(l)/EWT(m)/EWG(m) Pc-L/
 Pl-L/Po-L/Pr-L/Ps-L/Pz-6/Pab-10 IJP(c) AT/RM/WW

ACCESSION NR: AP5011185

UR/0233/64/000/006/0093/0101

AUTHOR: Polak, L. S.; Mukhtarova, T. A.

TITLE: System of equations for a plasma jet with account of the reaction of the decomposition of methane in it

SOURCE: AN AzerbSSR. Izvestiya. Seriya fiziko-tehnicheskikh i matematicheskikh nauk, no. 6, 1964, 93-101

TOPIC TAGS: methane, hydrogen jet, plasma jet, methane decomposition, acetylene production, methane cracking

ABSTRACT: The purpose of the investigation was to find the optimal conditions of acetylene yield during cracking of methane in a plasma jet by analyzing the system of hydrodynamic equations of a plasma jet in which thermal decomposition of methane takes place. The analysis is limited to one-dimensional stationary jet flow, which is assumed to be laminar; the external forces are disregarded. Methane at room temperature is assumed to be introduced uniformly at an arbitrary point into a jet of hydrogen at high temperature (~ 3000K). A system of differential equations for this process is written out with account of the boundary conditions and the con-

Card 1/2

L 51467-65

ACCESSION NR: AP5011185

2

ervation laws. The transport coefficients which are involved in these equations are determined from approximate formulas. It is shown that thermal diffusion can be neglected. The dissipative terms in the transport equations are estimated. The zeroth and first approximation to the system of equations are obtained, making it possible to solve the system by successive approximations. "The authors thank A. Ya. Temkin and Yu. A. Khait for active participation in a discussion of the paper and for valuable remarks." Orig. art. has: 20 formulas.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: ME, OC

NR REF SOV: 005

OTHER: 004

Card 178 2/2

L 22440-65 ENG(j)/EWT(m)/EPF(c)/EPF(n)-2/ENP(j)/T/EWA(h)/EWA(l) Pc-4/Pr-4/
Pu-4/Peb GG/RM

ACCESSION NR: AP5000485

S/0062/64/000/011/2072/2072

AUTHOR: Gusel'nikov, L. Ye.; Nametkin, N. S.; Polak, L. S.; Cherny'sheva,
T. I.

TITLE: Radiation polymerization¹⁹ of triallylsilanes 7

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 11, 1964, 2072

TOPIC TAGS: radiation polymerization¹⁹, triallylsilane, cyclopolymerization,
methyltriallylsilane monomer, phenyltriallylsilane monomer, residual unsatura-
tion

ABSTRACT: This article deals with the cyclopolymerization of methyltriallylsi-
lane and phenyltriallylsilane monomers in a 10% benzene solution subjected to
gamma irradiation with a dose rate of 1.5×10^6 r/hour and at 30 C. Both silanes
formed white powders which are easily soluble in various solvents and melt at
80-100C. Yield was 86 and 64% respectively. Comparison of the optical density
of double-bond valence vibrations in monomer and polymer showed a 13-20%
residual unsaturation. It is assumed that the cyclopolymerization reaction pro-
ceeds with formation of mono and bicyclic links in the main polymer backbone.

Card 1/2

L 22440-65
ACCESSION NR: AP5000485

Orig. art. has: 1 formula

ASSOCIATION: Institut neftekhimicheskogo sinteza im. A. V. Topchieva
Akademii nauk SSSR (Institute of Petrochemical Synthesis, Academy of Sciences
SSSR)

SUBMITTED: 12Mar64

ENCL: 00

SUB CODE: GC, OC

NR REF SOV : 002

OTHER: 001

Card 2/2

ACCESSION NR: AP4024406

8/0204/64/004/001/0077/0081

AUTHOR: Glavati, O. L.; Polak, L. S.

TITLE: Kinetics and mechanism of radiation polymerization in layers of montmorillonite clathrate compounds

SOURCE: Neftekhimiya, v. 4, no. 1, 1964, 77-81

TOPIC TAGS: Radiation polymerization, kinetics, mechanism, inclusion compound, clathrate compound, montmorillonite, gamma irradiation, Co 60 irradiation, polymer yield, radiation dose, polymer dimension, acrylonitrile, polyacrylonitrile, activation energy, syndiotactic polymer

ABSTRACT: This work was conducted as a continuation of earlier work (O. L. Glavati, L. S. Polak, V. V. Shchekin, Neftekhimiya 3, No. 6, 905, 1963) to study the kinetics and mechanism of the polymerization under gamma irradiation in montmorillonite clathrate compounds. Acrylonitrile was adsorbed onto montmorillonite and then subjected to Co-60 radiation. The yield of polymer was dependent on radiation dosage to about 80% conversion showing the monomer concentration had not changed. The polymer is cross-linked and has dimensions conforming to the montmorillonite sections between which the polymerization occurred; it has

Card 1/2

ACCESSION NR: AP4024406

a two-dimensional network cross-linked with regularly spaced syndiotactic chains. The temperature function of polymerization shows that above about 20C the energy of activation is about 2 kcal/mol; below 20C it approaches zero. It is proposed that the polymerization proceeds by a radical mechanism. A scheme for the polymerization between layers of the montmorillonite resulting in the formation of a double layer of polymer was devised. Orig. art. has: 4 figures.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR im. A. V. Topchiyeva
(Institute of Petrochemical Synthesis, AN SSSR)

SUBMITTED: 28Aug63

DATE ACQ: 17Apr64

ENCL: 00

SUB CODE: CH

No. REF. SOV: 002

OTHER: 005

Card 2/2

ACCESSION NR: AP4032517

S/0204/64/004/002/0314/0319

AUTHOR: Makarov, V. I.; Polak, L. S.

TITLE: Radiolysis of cyclohexane. Effect of temperature and the aggregate state of cyclohexane.

SOURCE: Neftekhimiya, v. 4, no. 2, 1964, 314-319

TOPIC TAGS: cyclohexane, radiolysis, temperature effect, aggregate state, gaseous cyclohexane, liquid cyclohexane, solid cyclohexane, carbon hydrogen bond rupture, cyclohexene, dicyclohexyl, carbon carbon bond rupture, cyclopropane, monomolecular decomposition, excited cyclohexane

ABSTRACT: The effect of temperature and of the aggregate state of cyclohexane on the yield of its radiolysis products was investigated and explained. The yield of products formed by the rupture of the C-H bond (cyclohexene and dicyclohexyl) is independent of temperature in the -195C to +50C range (solid to liquid). The yield of hydrogen increased very slightly with increase in temperature. The yield of C₁ - C₄ products formed by the rupture of the C-C bond was determined at a dosage of 3×10^{19} electron volts/ml. The absolute value of the yields was

Card 1/5

ACCESSION NR: AP4032517

ENCLOSURE: 01

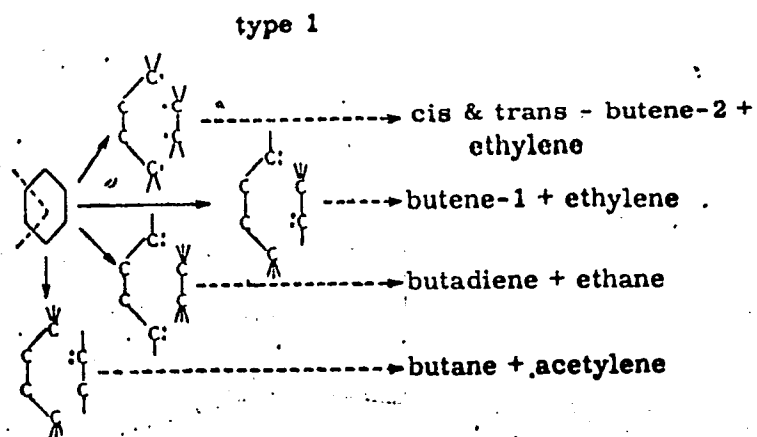


Fig. 1. Decomposition of excited cyclohexane molecules.

Card 3/5

ACCESSION NR: AP4032517

ENCLOSURE: 02

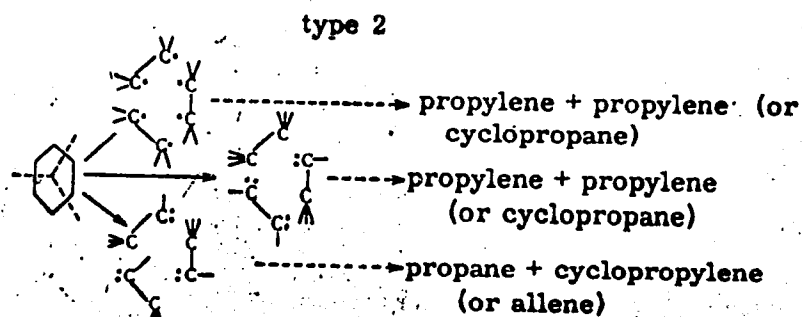


Fig. 1 Continue

Card 4/5

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V

ACCESSION NR: AP4032517

ENCLOSURE: 03

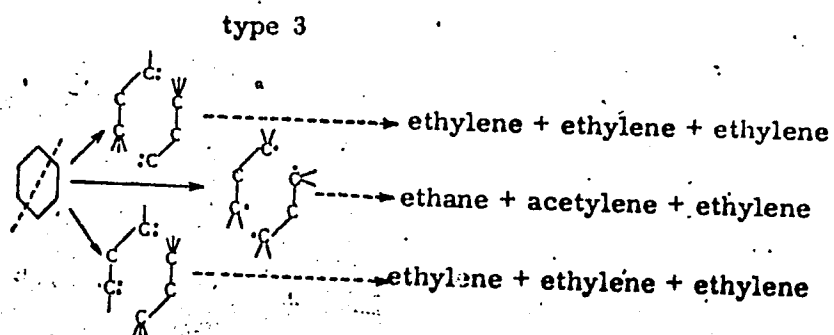


Fig. 1.. Continue

Card 5/5

BRODSKIY, A.M.; KOLBANOVSKIY, Yu.A.; POLAK, L.S.

Concerning the remarks on articles by I.U.A. Kolbanovskii,
A.M. Brodskii, L.S. Polak on the mechanism of radiolysis
inhibition. Kin. i kat. 5 no.2:360-364 Mr-Apr '64.

(MIRA 17;8)

1. Institut neftekhimicheskogo sinteza AN SSSR imeni A.V.
Topchiyeva.

ACCESSION NR: AP4017629

S/0190/64/006/002/0197/0200

AUTHORS: Kustanovich, I. M.; Patalakh, I. I.; Polak, L. S.

TITLE: Semiconducting properties of pyrolyzed polyacrylonitrile fibers

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 2, 1964, 197-200

TOPIC TAGS: semiconductor, polyacrylonitrile, pyrolyzed polyacrylonitrile fiber, adsorption, n type conductivity, p type conductivity, p n junction

ABSTRACT: Investigations were made on polyacrylonitrile fabric and individual fibers. The fabric samples were 1 x 0.5 cm and 10 microns thick. They were heat-treated in a current of nitrogen for 120 hours to temperatures of about 650° for A samples and 550° for B samples. The A samples were heated in a vacuum of 10-4 mm Hg to 200°. In this range their electrical conductivity increased markedly, but after this it became independent of temperature. B samples were treated repeatedly in a vacuum, and this led to a sequential increase in conductivity and a decrease in activation energy. The experiments show that the effect of adsorption is responsible for the variations in the conductivity as well as for the sign of the thermoelectromotive force. The bulk of pyrolyzed polyacrylonitrile

Card 1/2

ACCESSION NR: AP4017629

has n-type conductivity, but the surface layer with adsorbed gases has p-type conductivity. These studies now make it possible to obtain experimentally p-n junctions in polyacrylonitrile. Orig. art. has: 4 figures.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR (Institute of Petrochemical Synthesis AN SSSR)

SUBMITTED: 12Jul62

DATE ACQ: 23Mar64

ENCL: 00

SUB CODE: PH, CH

NO REF SOV: 003

OTHER: 000

Card 2/2

ACCESSION NR: AP4030375

S/0190/64/006/003/0545/0550

AUTHOR: Paushkin, Ya. M.; Polak, L. S.; Vishnyakova, T. P.;
Patalakh, I. I.; Machus, F. F.; Sokolinskaya, T. A.

TITLE: New iron-containing ferrocene-based polymers and their
electrophysical properties.

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 3, 1964, 545-
550

TOPIC TAGS: organic semiconductor, semiconducting polymer, ferrocene
polymer, ferrocene polymer preparation, electrical property

ABSTRACT: Fourteen new polymers based on ferrocene and a number
of aromatic compounds have been prepared by polyrecombination or
polycondensation, and their electrical properties have been studied
at the Moscow Institute of the Petrochemical and Gas Industry imeni
Gubkin. The polyrecombination of ferrocene and α -bromonaphthalene,
p-dichlorobenzene, benzonitrile, salicylic acid, salicylaldehyde, or
benzaldehyde, and of isobutyl-, isopentyl-, or isoctylferrocene alone

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ACCESSION NR: AP4030375

was carried out at 175—200C in the presence of tert-butyl peroxide at various starting material-to-peroxide molar ratios. Yields of 3—39% for soluble (dark-brown) and 23—77% for insoluble (black) solid polymers were obtained. The polycondensation of ferrocene with acetone in the presence of ZnCl_2 and hydrogen chloride at 56C formed soluble polymers; that of acetyl- or 1,1'-diacetylferrocene alone in the presence of ZnCl_2 at 200C and 180C respectively yielded both soluble and insoluble polymers. All the polymers but alkylferrocene-polyrecombination products gave a one-component signal in the EPR spectrum; x-ray structural analysis showed them to be amorphous, and IR spectroscopy, to be conjugated polymers. Electrical conductivity was studied at 20—300C and 1×10^{-4} or 760 mm Hg after degassing at 1×10^{-4} mm Hg and 50C for 3 hr. All the polymers showed a positive temperature coefficient and an exponential temperature dependence of conductivity. Electrical conductivity at 50C ranged from 1×10^{-12} to $1 \times 10^{-9} \text{ ohm}^{-1}\text{cm}^{-1}$, and activation energy, from 0.3 to 1.74 ev (no degassing). Study of the effect of surface adsorption on the semiconducting properties of the 1,1'-diacetylferrocene polymer showed that the high activation energies (1.5 ev) are

Card 2/3

ACCESSION NR: AP4030375

caused mostly by surface adsorption and only to a small degree by π -electron excitation from the valence to the conduction band.
Orig. art. has: 4 tables, 2 figures, and 3 formulas.

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy
promyshlennosti im. Gubkina (Moscow Institute of the Petrochemical
and Gas Industry)

SUBMITTED: 02Apr63

DATE ACQ: 07May64

ENCL: 00

SUB CODE: CH,PH

NO REF SOV: 011

OTHER: 002

Card 3/3

L 16027-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(1) Pc-l/Pr-l/Peb/
 ACCESSION NR: AP4049152 Pu-l/ ASD(m)-3/AFETR S/0190/64/006/011/2002/2007
 GG/RM

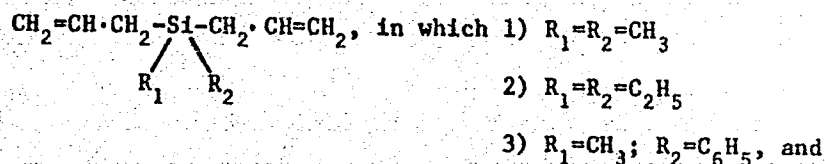
AUTHOR: Gusel'nikov, L. Ye.; Nametkin, N. S.; Polak, L. S.; Cherny'sheva, T. I.

TITLE: Polymerization of diallylsilanes under the action of γ -radiation 19

SOURCE: Vy'sokomolekulyarnyye soyedineniya, v. 6, no. 11, 1964, 2002-2007 B

TOPIC TAGS: organosilicon compound, diallyl silane, allylsilane, polymerization, ionized radiation, ionized radiation induced polymerization, gamma radiation

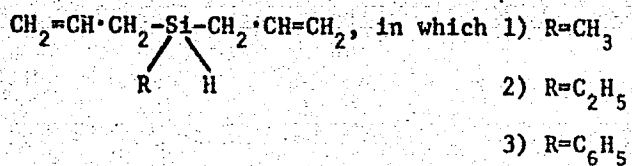
ABSTRACT: The mechanism of γ -ray-induced polymerization of diallylsilanes has been investigated. Monomers of the following general compositions were used:



Cord 1/3

L 16027-65

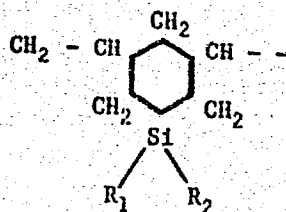
ACCESSION NR: AP4049152



Polymerization was carried out in benzene, in glass ampoules, in the absence of oxygen. Co^{60} was used as the γ -radiation source, having a rate of $1.5 \cdot 10^6$ r/hr at 30C. Light, soluble, and fusible powders with 50--110C melting points were obtained. The basic composition of the polymers obtained was that of the monomers. The IR spectra and the low unsaturation of the polymers indicate that polymerization occurs according to the intermolecular-intramolecular mechanism, which produces the following six-membered organosilicon ring:

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L 16027-65
ACCESSION NR: AP4049152



Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR (Institute of Petro-chemical Synthesis, AN SSSR)

SUBMITTED: 20Jan64

ENCL: 00

SUB CODE: GC, NP

NO REF SOV: 005

OTHER: 005

ATD PRESS: 3141

Card 3/3

ANDRES, U.TS.; POLAK, L.S.

Measurement of electromagnetic expulsion of bodies from a conducting liquid. Inzh.-fiz. zhur. 7 no.8:121-123 Ag '64. (MIRA 17:10)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti, Moskva.

BEREZKIN, V.G.; MYSAK, A Ye.; POLAK, L.S.

Use of sodium-aluminum hydrides for determining water traces.
Khim. i tekhn. topl. 1 masel 9 no. 2:67-70 F '64. (MIRA 17:4)

1. Institut neftekhimicheskogo sinteza AN SSSR.

L 25238-65 EWG(j)/EWG(r)/EWT(m)/EPF(c)/EPF(n)-2/EPR/EWP(j)/T/EWA(h)/EWA(1)
 Pc-l/Pe-5/Pr-l/Ps-l/Pu-l/Peb RPL GG/RM/WW

S/0073/64/030/012/1318/1321

62
60
6

ACCESSION NR: AP5002750

AUTHOR: Kornev, K.A.; Kachan, A.A.; Chervyatsova, L.L.; Polak, L.S.; Mertvichenko, Ye. F.; Demchenko, S.S.

TITLE: Kinetics of the radiochemical graft copolymerization of acrylonitrile with capron fiber

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 30, no. 12, 1964, 1319-1321

TOPIC TAGS: vapor seeding copolymerization, capron fiber, acrylonitrile vapor, copolymerization constant, radiation polymerization, graft copolymer, polyacrylonitrile

ABSTRACT: Degreased, drawn, capron fiber was irradiated (Co60 source, 1600 curies, 100 rad/sec, 10^{-3} mm Hg, room temperature, 0.25 Mrad) and exposed to an acrylonitrile vapor at 80 mm pressure in a study of the kinetics of vapor seeding graft copolymerization which does not involve formation of a homopolymer. Graphs illustrate the effects of temperature (22-60C, 0-24 hrs), radiation dosage (0-20 Mrad) and monomer vapor pressure (30-80 mm Hg, 0-10 hrs). The authors calculated constants for the rate of chain growth, rate of chain disruption, the apparent activation energy (1.9 Kcal/mol), activation energy of chain growth and chain disruption, the average distance between initiation centers (120 A) and the average lengths of chains. An increase in monomer

Card 1/2

L 25238-65

ACCESSION NR: AP5002750

vapor pressure led to an increase in the quantity of copolymerized polyacrylonitrile. ²
An increase in temperature decreased the amount of copolymerization, while an increase in radiation dosage above 2 Mrad had little effect. "The authors are indebted to A. Ya. Rozovski for participating in the evaluation of the results". Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (High polymer institute, AN SSSR)

SUBMITTED: 25Dec63

ENCL: 00

SUB CODE: OG

NO REF SOV: 003

OTHER: 005

Card 2/2

ALEKSANDROV, A.Yu.; DORFMAN, Ya.G.; LEPENDINA, O.L.; MITROFANOV, K.P.;
PLOTNIKOVA, M.V.; POLAK, L.S.; TEMKIN, A.Ya.; SHPINEL', V.S.

Resonance absorption spectra of γ -quanta and the magnetic
susceptibility of solutions of some organotin compounds.
Zhur. fiz. khim. 38 no.9:2190-2197 S '64. (MIRA 17:12)

1. Institut neftekhimicheskogo sinteza AN SSSR i Institut yadernoy
fiziki Moskovskogo gosudarstvennogo universiteta.

ACCESSION NR: AP4038521

S/0020/64/156/003/0537/0540

AUTHOR: Morozov, Ye. M.; Polak, L. S.; Fridman, Ya. B.

TITLE: Variational principles of crack development in solids

SOURCE: AN SSSR. Doklady*, v. 156, no. 3, 1964, 537-540

TOPIC TAGS: crack development, free energy, variational mechanical principle, thermodynamics, reversible process, irreversible process, Hamiltonian principle

ABSTRACT: It has been observed by A. P. Alexandrov (Vestn. AN SSSR #7-8, 1944) that the focus of a mechanical rupture is bounded by a circular arc. The present paper is an attempt to develop, on the basis of this observation, a physical explanation of the process in terms of variational principles of mechanics and of thermodynamics of both reversible and irreversible processes. Various cases are considered of which the extreme cases are: (1) Stationary equilibrium rupture - the development of the crack is caused by slow increase of external forces. The crack ceases to grow if the forces stop to increase. The condition for this is, that the variation of the free energy δL must be zero, if the crack trajectory is varied. (2) Nonstationary nonequilibrium rupture. This case is characterized

Card 1/2

ACCESSION NR: AP4038521

by $\delta L \neq 0$. Since L represents the energy, and can be considered as a Lagrangian function, the Hamiltonian principle can be applied:

$$\int_{t_1}^{t_2} \delta L dt = 0.$$

Intermediate cases are also considered, where the principle of minimal entropy increase is involved. Orig. art. has: no figures, 5 equations.

ASSOCIATION: Moskovskiy inzhenerno - fizicheskiy institut (Moscow Engineering and Physics Institute)

SUBMITTED: 02Nov63

DATE ACQ: 09Jun64

ENCL: 00

SUB CODE: ME 15

NO REF SOV: 011

OTHER: 002

Card 2/2

POIAK, L.S.; KHAIT, Yu.L.

Some problems of the kinetics of chemical reactions in plasma jets. Dokl. AN SSSR 156 no. 4:920-923 Je '64. (MIRA 17:6)

1. Institut neftekhimicheskogo sinteza AN SSSR. Predstavleno akademikom S.I.Vol'fkovichem.

L 16719-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
 ACCESSION NR: AP4043550 S/0020/64/157/004/0934/0937

AUTHORS: Aleksandrov, A.Yu.; Okhlovystin, O.Yu.; Polak, L.S.;
Shpinel', V.S. B

TITLE: Moesbauer effect in unsymmetrical organotin compounds/contain-
 ing electron donor substituents

SOURCE: AN SSSR. Doklady*, v. 157, no. 4, 1964, 934-937

TOPIC TAGS: Moesbauer effect, unsymmetrical organotin compound,
 organotin compound, tetravalent tin compound, resonance absorption
 spectrum, electron donor group, triphenyltinlithium, hexaethyldis-
 tannane, hexaphenyldistannane, quadrupole splitting, isomeric shift,
 doublet line

ABSTRACT: The resonance absorption spectra of unsymmetrical organo-
 tin compounds containing electron donor (with respect to the tin
 atom) substituents, and of certain other tetravalent tin compounds,
 were studied. Measurements were made at liquid nitrogen temperature;
 ^{119}Sn (as SnO_2) was used as the γ -ray source; the γ -quantum of 23.8
 kev was registered on a resonance counter. The spectra of $\text{R}_n\text{SnH}_{4-n}$,
 R_3SnLi (triphenyltinlithium), $\text{R}_3\text{Sn-SnR}_3$ (hexaethyl- and hexaphenyl-
 Cord 1/3

L 16719-65

ACCESSION NR: AP4043550

distannane) and R_2SnR' type compounds were all singlets with maxima at 1.45, 1.40, 1.35, corresponding to line widths of 1.15-1.20 mm/sec. Regardless of the electron donor substituent bonded directly to the Sn, the quadrupole splitting Δ was 0; the symmetry of the p-component of the four Sn bonds was not noticeably disturbed, and the density of the s-electrons near the Sn^{119} nucleus was increased only slightly. While $\Delta = 0$ in donor (D)-containing molecules R_nSnD_{4-n} , the quadrupole splitting in acceptor (A) type molecules R_nSnA_{4-n} varied from 0 to 4.8 mm/sec, depending on A. In both of these types of Sn compounds the isomeric shift varied within $\pm 50\%$ of $\delta = 1.30$ for the symmetrical R_4Sn , indicating the isomeric shift caused by electron acceptor groups was compensated to a great degree by the electron donor substituents; in inorganic tin compounds, δ varied from 0 to 4. In compounds of the type $(C_4H_9)_nSn(OCOC(CH_3)=CH_2)_{4-n}$ the resonance absorption spectra had a doublet structure; the quadrupole split increased with increase in number of substituent radicals and was smaller in polymers in comparison to the respective monomers. The values for Δ and δ for $(C_4H_9)_2Sn(OCOC(CH_2)_nCH_3)_2$, containing no double bond, were identical with those for the corresponding unsaturated compound; δ again depended little on the exchange of alkyl groups for

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L 16719-65

ACCESSION NR.: AP4043550

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electron acceptor groups and almost none on increasing the number of these groups. The resonance absorption spectra for $(\text{CH}_3)_3\text{SnC}_6\text{H}_5$, $(\text{CH}_3)_3\text{SnCH}=\text{CH}_2$ and $(\text{CH}_3)_3\text{Sn}(\text{C}_6\text{H}_4)\text{CH}=\text{CH}_2$ also had only singlet lines and was the same as for $(\text{CH}_3)_4\text{Sn}$, indicating exchange of CH_3 by C_6H_5 or a conjugated bond system did not change the electron density or cause a gradient in the electric field of the Sn^{119} nucleus. "The authors thank T. Krasnov, L. V. Layn for supplying some samples of the organotin compounds and M. Ye. Dyatkin and G. K. Semin for valuable remarks in discussing the work." Orig. art. has: 1 table.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis, Academy of Sciences SSSR); Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organo-metallic Compounds, Academy of Sciences SSSR); Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova (Moscow State University)

Submitted: 24Apr64

Encl: 00

Sub Code: GC, GP

Nr Ref Sov: 005

Other: 000

Card 3/3

L 8924-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EPA(w)-2/EWP(j)/T/EWP(q)/EWP(b)/EWA(m)-2
~~Pc-1/Pa-1/Pab-2h/Pq-1/Pr-1/Ps-1/Pt-10 LIP(c)/RPL/ARWL/ESD(t)/RAEM(t)/~~

ASD(a)-5/ESD(dp) WH/PM/WH

ACCESSION NR: AP4045098

S/0020/64/158/001/0141/0142

AUTHOR: Vlasov, A. V.; Glazunov, P. Ya.; Morozov, Yu. L.;
 Patalakh, I. I.; Polak, L. S.; Tsetlin, B. L.; Rafikov, S. R. (Acad-
 emician AN KazSSR)

TITLE: Synthesis of semiconducting combined materials by the
 technique of gas-phase, radiation-induced, graft polymerization

SOURCE: AN SSSR. Doklady*, v. 158, no. 1, 1964, 141-142

TOPIC TAGS: organic semiconductor, semiconducting polymer, graft
 polymerization, polymer glass grafting, polyphenylacetylene, poly-
 acrylonitrile, pyrolysis, pyrolyzed polymer

ABSTRACT: A study has shown the feasibility of preparing fibers
 combining the high mechanical strength of glass and the electrical
 properties of organic semiconductors by the technique of gas-phase,
 radiation-induced, graft polymerization; in addition, the high ther-
 mal stability of glass makes it possible to heat treat (pyrolyze)
 the fibers to produce the desired electrical properties. It is
 noted that heretofore all organic semiconducting materials were

Card 1/2

1-8924-65

ACCESSION NR: AP4045098

3
either nonthermoplastic and insoluble powders or brittle fibers and fabrics. Radiation-induced graft polymerization was carried out in the absence of air in a glass two-chamber apparatus which made it possible to thermostat the glass fiber and the liquid monomer separately at different temperatures. The radiation source was an electron accelerator. The glass substrate was an ordinary, alkali-free glass fiber consisting of 1000 monofilaments 6—7 μ thick. Irradiation of the fiber at 150C in the presence of phenylacetylene yielded a material having an electrical conductivity of $1.3 \times 10^{-5} \text{ ohm}^{-1} \text{ cm}^{-1}$ at 300C. Irradiation of the fiber at 80C in the presence of acrylonitrile also yielded a material with semiconducting properties; pyrolysis in nitrogen at 500C produced a rise in conductivity and a drop in activation energy. The mechanical strength of the fiber was 40—50 kg/mm². Orig. art. has: 11 figures.

ASSOCIATION: none

SUBMITTED: 11 May 62

ATD PRESS: 3110

ENCL: 00

SUB CODE: MT, GC

NO REF SOV: 009

OTHER: 000

Card 2/2

L 34857-65 EWG(j)/EWT(m)/EPF(c)/EWP(j)/T/EWA(h)/EWA(1) Pc-4/Pr-4/Peb RM

ACCESSION NR: AP5007200

S/0286/65/000/003/0064/0064

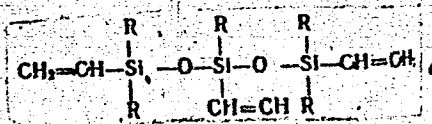
AUTHOR: Gusel'nikov, L. Ye.; Nametkin, N. S.; Polak, L. S.; Chernysheva, T. I.

TITLE: Polymerization method for organosilicon compounds. (Class 39, No. 168023)

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 3, 1965, 64

TOPIC TAGS: organosilicon compound, siloxane, polysiloxane trivinyltrisiloxane, polymer, soluble polymer

ABSTRACT: An Author Certificate has been issued for a polymerization method for organosilicon compounds. This method involves irradiation of the silicon-containing monomer with ionizing radiation, e.g., gamma radiation from a Co^{60} source. In order to obtain a soluble polymer, trivinyltrisiloxane monomers are used which have the general formula:



Card 1/2

L 34857-65

ACCESSION NR: AP5007200

In order to raise the soluble polymer yield, the monomer is irradiated in a solvent such as benzene at 0--100C, (0.2--1.0) 10^8 r, and 10^2 -- 10^3 r/sec. Orig. art. has: 1 formula. [SM]

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR (Institute of Petrochemical Synthesis, AN SSSR)

SUBMITTED: 28Aug63

ENCL: 00

SUB CODE: OC, GC

NO REF SOV: 000

OTHER: 000

ATD PRESS: 3211

Card 2/2

L 58478-65 EWG(j)/EWT(m)/EPF(c)/EWP(j)/T/EWA(h)/EWA(c)/EWA(1) PC-4/Pr-4/PeB RM
 ACCESSION NR: AP5015241 UR/0286/65/000/009/0023/0023
 541.15:547.313.2

AUTHOR: Glushnev, V. Ye.; Kolbanovskiy, Yu. A.; Patalakh, I. I.; Polak, L. S.;
Popov, V. T.; Shakhray, V. A.

TITLE: Radiation-induced synthesis of organic compounds with various functional
 groups. Class 12, No. 170503

SOURCE: Byulleten' izobreteniy i tovarnykh znakov no. 9, 1965, 23

TOPIC TAGS: radiation, radiation induced synthesis

ABSTRACT: An Author Certificate has been issued for a radiation-induced synthesis of organic compounds having various functional groups, such as carboxylic acids, amines, nitro and nitroso compounds, thio compounds, alcohols, etc. The method consists in the ionizing irradiation of a reaction mixture comprising a monomer, such as ethylene, and a reactant, such as CO₂, NH₃, NO₂, NO, H₂S, SO₂, H₂O, etc., which determines the type of the derivative formed. To increase the radiation yield and to obtain a compound having the desired molecular weight, the reaction mixture is irradiated in the presence of a catalyst, e.g., aluminum oxide or silica gel.

[SM]

Cord 1/2

L 58478-65

ACCESSION NR: AP5015241

ASSOCIATION: none

SUBMITTED: 12Jun63

ENCL: 00

SUB CODE: GC, *HP*

NO REF SOV: 000

OTHER: 000

ATD PRESS: 4019

llc
Card 2/2

I 59531-65 EWT(m)/EPF(c)/EWG(m)/EPR/EMP(j)/I Pc-4/Pr-4/Ps-4 DS/WH/RM
 ACCESSION NR: AP5016810 UR/0195/65/006/003/0399/0405
 547.211 : 542.921 : 541.124

AUTHOR: Gulyayev, G. V.; Polak, L. S.

TITLE: Kinetics of thermal decomposition of methane

SOURCE: Kinetika i kataliz, v. 6, no. 3, 1965, 399-405

TOPIC TAGS: kinetics, thermal decomposition, methane, acetylene

ABSTRACT: A mathematical treatment of the kinetics of thermal decomposition of methane was given assuming the conditions of: unlimited space, absence of concentration and temperature gradients, and instantaneous heat-up of gas to reaction temperature (time = zero). For such an idealized system a formula was derived for calculating maximum residence time of methane at reaction temperature to achieve a maximum conversion to acetylene

$$t_{max} = \frac{\ln \frac{K_2}{K_1}}{K_2 - K_1}$$

where: K_2 is the rate constant of thermal decomposition of ethane, K_1 is the rate

Card 1/2

L 59531-65

ACCESSION NR: AP5016910

constant of thermal decomposition of ethylene, and K_4 is the rate constant of thermal decomposition of acetylene. The values of K_2 , K_3 , and K_4 were taken from G. I. Kozlov and V. G. Knorre *Combustion and Flame*, 6, 253, 1962. At 2500°K $t_{\max} = 3.65 \cdot 10^{-5}$ sec and the conversion of methane to acetylene is 82% (0.41 moles of C_2H_2 from 1 mol of CH_4). At 3000°K t_{\max} is $4.6 \cdot 10^{-6}$ sec and the corresponding conversion to acetylene is 85%. Orig. art. has: 1 table, 2 figures, 7 formulas.

ASSOCIATION: Institut neftekhimicheskogo sinteza im. A. V. Topchiyeva AN SSSR
(Institute of Petrochemical Synthesis, AN SSSR)

SUBMITTED: 24Dec63

ENCL: 00

SUB CODE: GC

NO REF SOV: 005

OTHER: 012

llc
Card 2/2

DOIMATOV, S.A.; FOLAK, L.S.

Kinetics of radiation-induced allyl polymerization. Part 1.
Kinet. kat. 6 no.5:797-801 S-O '65.

(MIRA 18:11)

1. Institut neftekhimicheskogo sinteza imeni A.V.Topchiyeva
AN SSSR.

L 16068-66 EWT(1)/EWP(e)/EWT(m)/ETC(f)/EPF(n)-2/EWG(m)/T/EWP(t) IJP(c)
 ACC NR: AT6004494 JD/GS/AT/WH SOURCE CODE: UR/0000/65/000/000/0223/0232
 AUTHOR: Vurzel', F. B.; Dolgoplov, N. N.; Maksimov, A. I.; Polak, L. S.; Fridman,
 V. I.

ORG: none

TITLE: Application of high frequency electrodeless plasma generator to production
 of pure silicon and its oxides

SOURCE: AN SSSR. Institut neftekhimicheskogo sinteza. Kinetika i termodinamika
 khimicheskikh reaktsiy v nizkotemperaturnoy plazme (Kinetics and thermodynamics of
 chemical reactions in low-temperature plasma). Moscow, Izd-vo Nauka, 1965, 223-232

TOPIC TAGS: plasma generator, high energy plasma, plasma device, silicon, silicon
 dioxide, silicon carbide, plasma chemistry

ABSTRACT: The high frequency electrodeless plasma generator in chemical technology
 is superior to the electrode-type plasma generator since it eliminates the problem
 of contamination by the electrode material. The electrodeless plasma generator can
 handle the chemically aggressive as well as nonaggressive gases and it is particularly
 suitable for high temperature chemical processes. The typical conditions of opera-

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L 16068-66

ACC NR: AT6004494

2

tion of a high frequency electrodeless plasma generator are: argon flow rate 36-51 l/min, oxygen flow rate 1.1-2.1 l/min, hydrogen flow rate 1.2-1.8 l/min, discharge input 3.4-5.2 kilowatts, portion of input carried away by the gases 1.9-2.4 kilowatts, and loss of the input energy 1.5-3.3 kilowatts. The unit utilizes a power supply LGD-32 operating within 15-30 megacycles. A detailed temperature distribution in argon plasma is given. It is indicated that the high frequency electrodeless plasma technique can be employed to decomposition of SiO_2 into elemental silicon or silicon monoxide. Other important applications include the decomposition of SiCl_4 , formation of silicon carbide from methylchlorosilane, oxidation of SiCl_4 to silicon mono- or dioxide, and reduction of silicon dioxide. The temperature dependence of the concentration χ of silicon and silicon monoxide in silicon-containing decomposition products is shown in fig. 1. Orig. art. has: 4 figures, 4 tables, 5 formulas.

Card 2/3

L 16068-66

ACC NR: AT6004494

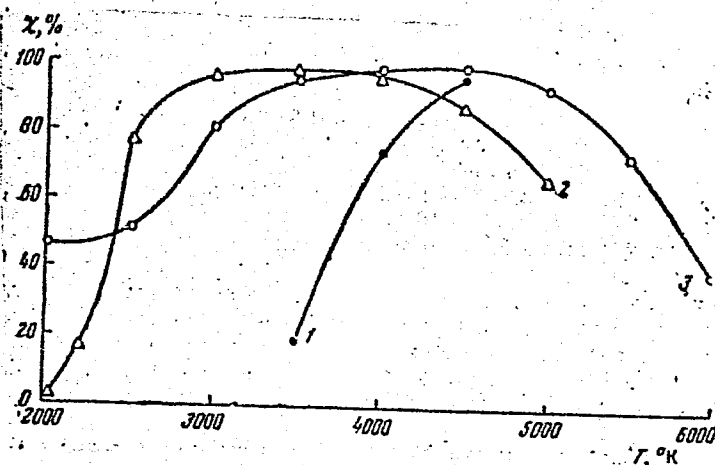


Fig. 1. 1--concentration of elemental silicon during thermal decomposition of SiCl_4 ; 2--concentration of SiO during oxidation of SiCl_4 with oxygen; 3--concentration of SiO during thermal decomposition of SiO_2 .

SUB CODE: 07,20/

SUBM DATE: 08Jul65/

ORIG REF: 004/

OTH REF: 005

Card 3/3

L 16069-66 EWT(1)/ETC(r)/EPF(n)-2/EWG(m) IJP(c) GS/AT

ACC NR: AT6004495

SOURCE CODE: UR/0000/65/000/000/0233/0237

AUTHOR: Aksenov, V. P.; Blinov, L. M.; Marin, V. P.; Polak, L. S.; Shchipachev, V. S.

ORG: none

TITLE: ^{21,44,55} An ultra-high frequency plasma generator and some of its possible applications in chemistry 84
84
B+1

SOURCE: AN SSSR. Institut neftekhimicheskogo sinteza. Kinetika i termodinamika khimicheskikh reaktsiy v nizkotemperaturnoy plazme (Kinetics and thermodynamics of chemical reactions in low-temperature plasma). Moscow, Izd-vo Nauka, 1965, 233-237

TOPIC TAGS: high energy plasma, plasma device, plasma generator, nitric oxide, plasma chemistry, UHF, plasma diagnostics, luminescence, spectrographic analysis

ABSTRACT: It is indicated that UHF plasma discharge at above atmospheric pressures may become an important tool in chemical technology since it permits carrying out chemical reactions at lower temperatures and pressures than would be necessary in the case of the corresponding catalytic processes. The UHF plasma generator set-up is shown in fig. 1. The basic advantage of the UHF plasma generator, from the

Card 1/2

L 16069-66

ACC NR: AT6004495

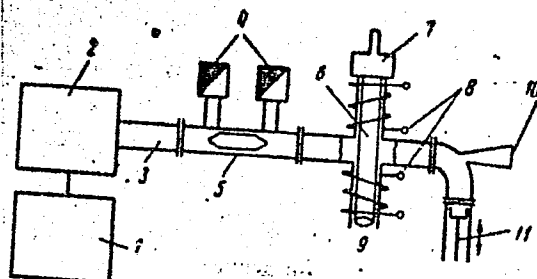


Fig. 1. 1--modulator; 2--magnetron; 3--wave guide $72 \times 34 \text{ mm}^2$; 4--calorimetric power (load) meters; 5--ferrite circulator; 6--discharge tube; 7--point of tangential air inlet; 8--selenoid; 9--point of introduction of gases; 10--plasma diagnostic observation window; 11--adjustible plunger.

standpoint of chemical technology, is the possibility of controlling the reaction temperature in a wide range, thus affecting both reaction rate and chemical equilibrium. The plasma temperature can be measured optically with great accuracy by means of an ICP-28¹⁰ spectrograph located perpendicular to the plasma motion axis. Plasma luminescence intensity is measured at a distance of 5 cm from the plasma active discharge zone. The dependence of the nitric oxide yield generated from air in the UHF plasma unit at 0.8 megawatt pulse power and air flow rate of 8 l/min is graphed. Orig. art. has: 2 figures.

SUB CODE: 07,20/

SUBM DATE: 08Jul65/

ORIG REF: 003/

OTH REF: 001

Card 2/2

DOLIDZE, G.M.; KIRTADZE, M.G.; KOLBANOVSKIY, Yu.A.; LUK'YANOV, A.T.;
POLAK, L.S.; PUSTYL'NIKOV, L.M.; TSÉTSKHLADZE, T.V.

Kinetics of radiation-induced isotope exchange of deuterium
with hydroxyl groups of silica gel. Kin. i kat. 6 no. 6:
1003-1009 N-D '65 (MIRA 1961)

1. Institut fiziki AN Gruzinskoy SSR; Institut neftekhimicheskogo sinteza AN SSSR imeni Topchiyeva i Kazakhskiy gosudarstvennyy universitet imeni Kirova. Submitted April 24, 1965.

BEREZKIN, V.G.; MYSAK, A.Ye.; POLAK, L.S.

Gas chromatographic analysis of mixtures of organic compounds
with a collective determination of alcohols. Zav. lab. 31 no.3:
282-284 '65. (MIRA 18:12)

1. Institut neftekhimicheskogo sinteza AN SSSR.

L 21224-66 EWT(m)/T/EWP(t) IJP(c) JD
 ACC NR: AP6003820 SOURCE CODE: UR/0181/66/008/001/0287/0290
 AUTHOR: Karasev, A. N.; Margolis, L. Ya.; Polak, L. S.
 ORG: Institute of Petrochemical Synthesis im. A. V. Topchiyev AN SSSR, Moscow
 (Institut neftekhimicheskogo sinteza AN SSSR)
 TITLE: Use of the Mossbauer effect for the study of solid solutions of Sn in 42
oxide semiconductors 16 27 B
 SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 287-290
 TOPIC TAGS: tin, inorganic oxide, solid solution, Mossbauer effect, semiconductor
 crystal, Mossbauer spectrum, line splitting
 ABSTRACT: The authors investigated the Mossbauer effect on Sn^{119} nuclei intro-
 duced into the crystal lattice of the oxide semiconductors Sb_2O_5 , Cr_2O_3 , V_2O_5 ,
 MoO_3 , and NiO . The solid solutions were prepared by different means. All samples
 were prepared at the Institute of Chemical Physics AN SSSR. The Mossbauer spectra
 were plotted with constant-speed apparatus. An SnO_2 source of 23.8-keV γ rays was
 used. The γ -ray detector was a resonant counter. Most measurements were made at
 room and liquid-nitrogen temperatures. The Mossbauer spectra of all the investi-
 gated solid solutions consisted of a single absorption line, with practically no

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2

L 21224-66

ACC NR: AP6003820

shift relative to the absorption line of SnO_2 . This means that in these solid solutions the S-electron density at the tin nuclei does not differ from that in the SnO_2 . Other characteristics of the Mossbauer spectrum are likewise unaffected by the use of the oxide compounds. Although no clearcut quadrupole splitting of the absorption spectrum was observed for any of these substances, it is deduced that some slight quadrupole interaction is present, of the same order as in SnO_2 , and the reasons for the small values of the quadrupole interactions are briefly discussed. Orig. art. has: 1 figure and 1 table.

SUB CODE: 20/ SUBM DATE: 24Apr65/ ORIG REF: 005/ OTH REF: 002

Card 2/2 *dda*

L 22746-66 EWT(m)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(l) IJP(c) CG/RM
 ACC NR: AP6010122 (A) SOURCE CODE: UR/0190/66/008/003/0557/0559

AUTHOR: Boken, Yu.; Gusel'nikov, L. Ye.; Nametkin, N. S.; Polak, L. S.; Chernysheva, T. I. 66

ORG: Institute of Petrochemical Synthesis, Academy of Sciences SSSR (Institut neftekhimicheskogo sinteza AN SSSR) B

TITLE: Radiation-induced polymerization of polyfunctional allylsilanes 7

SOURCE: Vysokomolekulyarnyye soyedinediya, v. 8, no. 3, 1966, 557-559

TOPIC TAGS: radiation polymerization, radiation effect, temperature effect, conversion rate, monomer, silane, allylsilane

ABSTRACT: An experimental study of the effect of solvents, dose rate, and temperature on radiation-induced polymerization of diethyldiallylsilanes (DEDAS) was made. The dependence of shrinkage of the system on the radiation dose, in the process of radiation-induced polymerization of various diallylsilanes, was determined by the dilatometric rate of 2.5 ml and the scale value of 0.01 ml at 25C, and the dose rate of 350 rad/sec. The shrinkage of the DEDAS system at the dose rate of 700 r/sec and at 50C was determined by the dilatometer scale rate of 0.005 ml. The effect of solvents was determined by comparing the yield of a polymer in the presence of solvents to the yield of a polymer in bulk polymerization, using the same dose of radiation. The dose rate and activation energy were plotted against the monomer con-

Card 1/2

UDC: 66.095.26+678.745

L 22746-66

ACC NR: AP6010122

version rate in the initial stage of the polymerization (up to a 15% yield). Orig.
art. has: 3 figures and 1 formula. [Based on author's abstract.] [AM]

SUB CODE: 07, 20/ SUBM DATE: 24Apr65/ ORIG REF: 002/ OTH REF: 005/

Card

2/2

ACC NR: AT7006784

(A)

SOURCE CODE: UR/3236/65/002/000/0074/0080

AUTHORS: Dolgoplov, N. N. (Candidate of technical sciences); Polak, L. S. (Doctor of physico-mathematical sciences); Fridman, V. I. (Engineer); Vurzel', F. B. (Engineer); Maksimov, A. I. (Engineer)

ORG: none

TITLE: High-frequency electrodeless discharge and the possibilities of its application in the production of polymeric materials

SOURCE: Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut novykh stroitel'nykh materialov. Sbornik trudov, no. 2(10), 1965. Elektrofizicheskiye metody issledovaniya stroitel'nykh materialov (Electrophysical methods of investigating building materials), 74-80

TOPIC TAGS: silicon compound, silicon dioxide, gas discharge, electric discharge

ABSTRACT: A high-frequency electrodeless discharge burner is described. The burner design is similar to that reported by A. V. Donskoy and S. V. Dresvin (Zh. Elektrotermiya, No. 5, 37, 1963). A schematic of the apparatus is presented. The temperature distribution in the flame was determined in terms of the absolute intensities of number of argon emission lines. The experimental results are shown graphically (see Fig. 1). A scheme for the continuous production of pure silicon

Card 1/3

ACC NR: AT7006784

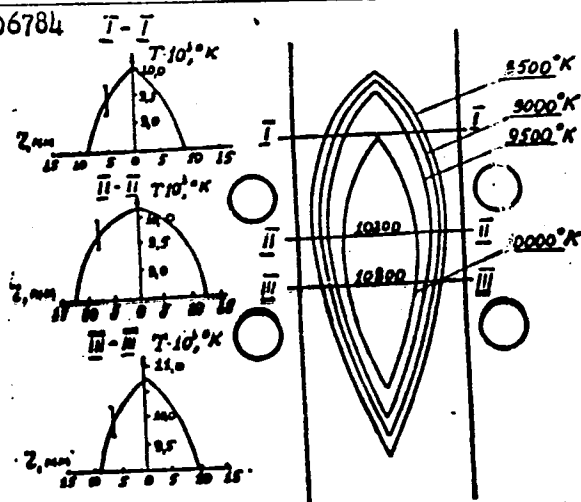
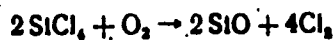
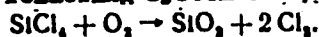


Fig. 1. Spatial distribution of temperature in an argon discharge containing additions of hydrogen

monoxide and silicon dioxide with the aid of the electrodeless burner was developed. This scheme is based on the following system of reactions:



The experimental results are tabulated. It was found that the use of the electrodeless discharge method introduces a considerable simplification in the production

Card 2/3

ACC NR: AT7006784

of high purity silicon dioxide. Orig. art. has: 1 table, 3 graphs and 2 equations.

SUB CODE: 11,07,09 SUBM DATE: none/ ORIG REF: 003/ OTH REF: 009

Card 3/3

ACC NR: AP7005596 (AN) SOURCE CODE: UR/0413/67/000/002/0023/0023

INVENTOR: Polak, L. S.; Shchipachev, V. S.

ORG: none

TITLE: Thermal method of obtaining nitrogen oxides. Class 12, No. 190354
[announced by the Institute of Petrochemical Synthesis im. A. V. Topchiyev
(Institut neftekhimicheskogo sinteza)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1967, 23

TOPIC TAGS: nitrogen oxide, oxygen, chemical stabilization, nitrose gas

ABSTRACT: This Author Certificate introduces a thermal method of obtaining nitrogen oxides from an air or an air-oxygen mixture with a subsequent stabilization of oxides. To reduce the energy consumption, the stabilization of oxides is carried out by an intensive mixing of combustible nitrose gases with the recycling cooled nitrose gases. [Translation of patent abstract] [NT]

SUB CODE: 07,11/SUBM DATE: 04Jul64/

L 10346-01 ENT(m)/ENP(t)/ETI IJP(c) GR/EM/JD
ACC NR: AP6028027

SOURCE CODE: UR/0251/66/042/001/0051/0056
47

AUTHORS: Dolidze, G. M.; Kolbanovskiy, Yu. A.; Polak, L. S.

ORG: Academy of Sciences, Georgian SSR, Institute of Physics, Tbilisi (Akademiya nauk Gruzinskoy SSR, Institut fiziki); Academy of Sciences SSSR, Institute of Petroleum-Chemical Synthesis, imeni A. V. Topchiyev (Akademiya nauk SSSR, Institut neftekhimicheskogo sinteza)

TITLE: A kinetic investigation of ⁷⁷hydrogen adsorption on ⁷⁷ γ - Al_2O_3 when acted on by gamma rays

SOURCE: AN GruzSSR. Soobschcheniya, v. 42, no. 1, 1966, 51-56

TOPIC TAGS: gas adsorption, gamma irradiation, kinetic equation

ABSTRACT: Specimens of Al_2O_3 were prepared and irradiated by a method similar to that previously described in several papers. During the experiment, the specimen of Al_2O_3 was separated from a hydrogen source by a glass partition. At the proper moment, the partition was removed and the adsorption was measured. During radiation of the Al_2O_3 , adsorption centers with substantially different lifetimes were created. These adsorption centers have substantially different activities, indicating inhomogeneity of the Al_2O_3 surface during radiation/chemisorption. The formula previously used to describe the kinetics of adsorption is valid only for a homogeneous

Card 1/2

L 10348-67

ACC NR: AP6028027

surface. The authors therefore suggest a new equation, $W = \bar{K}J\sqrt{n} S \alpha (1-\bar{\theta})$, where W is the rate of chemisorption, n the number of molecules in the gas phase, K the constant of adsorption rate, J the radiation dosage, S the surface of the adsorbent, α the number of potential adsorption centers per unit surface, and $\bar{\theta}$ the part occupied by the adsorption centers. The principal difference between this and the previous equation is the use of the mean value of $\bar{\theta}$ in the present equation rather than the true value. The two values are similar if the more active adsorption centers outnumber the less active centers at the time of irradiation. When $\bar{\theta} > 0.8$ this condition will not be fulfilled. This paper was presented by Academician E. L. Andronikashvili on 25 January 1966. Orig. art. has: 4 figures and 7 formulas.

SUB CODE: 11/ SUBM DATE: 25Jan66/ ORIG REF: 005/ OTH REF: 001

Card 2/2 mla

L 15193-66 EWT(m)/EWP(j)/EWA(1)/EWA(h) DIAAP RM/GS

ACC NR: AT5023437

SOURCE CODE: UR/0000/65/000/000/0113/0117

AUTHOR: Brodskiy, A. M.; Kolbanovskiy, Yu. A.; Polak, L. S.

ORG: none

TITLE: Energy transfer during radiolysis of hydrocarbons

SOURCE: Simposium po elementarnym protsessam khimii vysokikh energiy.
Moscow, 1963. Elementarnyye protsessy khimii vysokikh energiy (Elementary processes of the chemistry of high energies); trudy simpoziuma. Moscow, 1965, 113-117

TOPIC TAGS: radiation effect, excited state, electron energy, excited electron state, ~~HYDROCARBON~~

ABSTRACT: The effect of inhibition (by aromatic molecules, molecules of iodine, etc.) on electron excitation energy transfer during radiolysis of hydrocarbons at low and medium temperatures was studied. For highly excited states with a relaxation time of the order of 10^{-13} - 10^{-14} , the probability (in vacuum) of energy transfer from the excit-

Card 1/3

L 15193-66

AT5023437

cribes the characteristic features of inhibition of electronic energy transfer. Orig. art. has: 2 formulas.

SUB CODE: 07/ SUBM DATE: 23Feb65/ ORIG REF: 003/ OTH REF: 001

TS
Card 3/3

L 13819-66 EWT(m)/EPF(n)-2/EPF(j)/EWA(h)/EWA(l) GG/RM

ACC NR: AP6002480

SOURCE CODE: UR/0191/66/000/001/0037/0041

AUTHORS: Nechitaylo, N. A.; Pospishil, Ya.; Sanin, P. I.; Polak, L. S.

ORG: none

TITLE: Dihydroxyphenols-stabilizers for irradiated polypropylene

SOURCE: Plasticheskiye massy, no. 1, 1966, 37-41

TOPIC TAGS: polymer, polypropylene, radiation damage, radiation effect, polypropylene

ABSTRACT: The stabilizing action of hydroquinone, 2-methylhydroquinone, 2-tert-butylhydroquinone, 2-tert octylhydroquinone, 2,5-di-tert-butylhydroquinone, pyrocatechine, 4-methyl pyrocatechine, 4-tert-butylpyrocatechine, 4-tert-octylpyrocatechine, and 3,5-di-tert-butylpyrocatechine on the stability of irradiated polypropylene was studied. The initial polypropylene had a molecular weight of 390 000 and was irradiated with Co^{60} γ -radiation of 1.5--1.0 M roentgen intensity. Thermodifferential analysis curves, IR spectra, and viscosity for irradiated polypropylene specimens in the presence and absence of air (and containing varying amounts of different dihydroxyphenols) are presented in tables and graphs (see Fig. 1). The number of chain ruptures produced by the radiation was calculated after P. M. Black and B. J. Lyons (Proc. Roy. Soc., 253, 322, 1959). It was found

Card 1/2

UDC: 678.742.3:678.048.5

L 13819-66

ACC NR: AP6002480

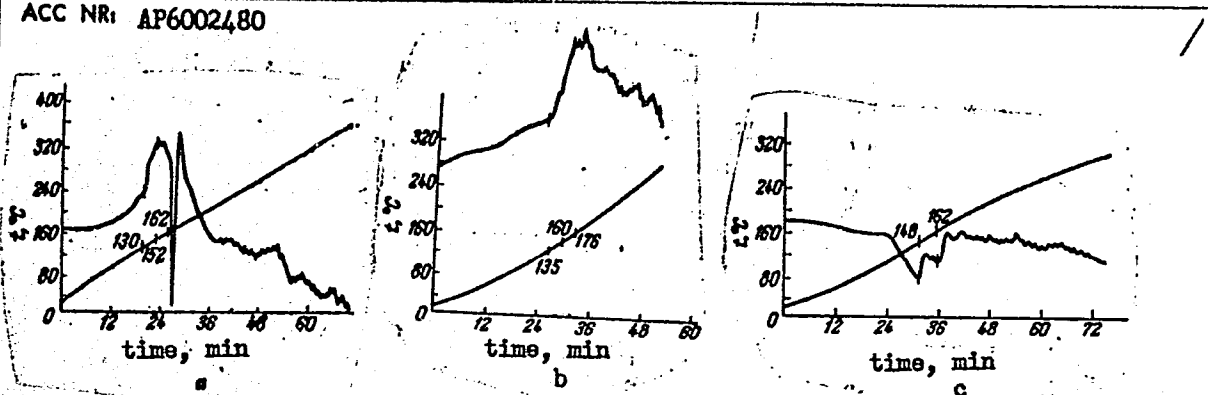


Fig. 1. Thermogram, obtained during the differential thermal analysis of polypropylene (irradiated in presence of air; radiation dosage 40 Mr). a - initial polypropylene; b - after irradiation containing 2-tert-butylhydroquinone; c - after irradiation containing 4-tert-butylpyrocatechine.

that 4-tert-butylpyrocatechine and 3,5-di-tert-butylpyrocatechine were the most effective stabilizing agents. A conclusion is reached that dihydroxyphenols stabilize irradiated polypropylene by inhibiting its reaction with atmospheric oxygen. The authors thank M. A. Dzyubin for his aid in the present work. Orig. art. has: 6 tables, 3 graphs, and 1 equation.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 008/ OTH REF: 003

Card 2/2 *RC*

GULYAYEV, G.V.; POLAK, L.S.

Kinetics of the thermal decomposition of methane. Kin. i kat. 6
no.3:399-405 My-Je '65. (MIRA 18:10)

1. Institut neftekhimicheskogo sinteza imeni Topchiyeva AN SSSR.

KARASEV, A.N.; POLAK, I.S.; CHERNIKOV, E.B.; SHEFTEL', V.S.

Study of adsorption processes by means of Moschauer effect. Kin. i
kat. 6 no.4:710-716 1965. (MIRA 18.9)

1. Institut neftekhimicheskogo sinteza imeni A.V.Topchiyeva AN SSSR.

DOLIDZE, G.M.; KOLBANOVSKIY, Yu.A.; POLAK, L.S.

Chemisorption of hydrogen on γ - Al_2O_3 . Kin.i kat. 6 no.5:897-
903 S-O '65. (MIRA 18:11)

1. Institut fiziki AN Gruzinskoy SSR i Institut neftekhimicheskogo
sinteza imeni Topchiyeva AN SSSR.